

8-6
1 1. (unchanged) For use in an oscillator, a two port differential mode SAW resonator
2 circuit for providing low phase noise in hostile environments comprising:

3 a two port SAW resonator having two inputs and two outputs;
4 at least one inductance coupled to one or more inputs or outputs of the SAW
5 resonator, wherein the at least one inductance is connected and sized to approximately tune out
6 a stray capacitance seen across the inputs or outputs within an equivalent circuit for the SAW
7 resonator at a selected frequency; and

8 at least one variable tuning capacitance connected in series with the one or more
9 inputs or outputs of the SAW resonator, wherein the at least one tuning capacitance may be
10 employed to alter a resonant frequency of the SAW resonator circuit.

1 2. (unchanged) The two port differential mode SAW resonator circuit as set forth in
2 Claim 1 wherein the at least one inductance further comprises an inductor connected across the
3 inputs of the SAW resonator.

1 3. (unchanged) The two port differential mode SAW resonator circuit as set forth in
2 Claim 2 wherein the inductor further comprises a center tap inductor connected at a center tap
3 through a resistance to a ground voltage level.

1 4. (unchanged) The two port differential mode SAW resonator circuit as set forth in
2 Claim 1 wherein the at least one variable tuning capacitance further comprises:

3 a first varactor diode serially connected within a first differential signal line to
4 a first input of the SAW resonator; and
5 a second varactor diode serially connected within a second differential signal line
6 to a second input of the SAW resonator.

1 5. (unchanged) The two port differential mode SAW resonator circuit as set forth in
2 Claim 4, further comprising:

3 a first resistor connecting the first differential signal line to a tuning voltage level;
4 and
5 a second resistor connecting the ^{second} [first] differential signal line to the tuning voltage
6 level.

1 6. (unchanged) The two port differential mode SAW resonator circuit as set forth in
2 Claim 5, further comprising:

3 blocking capacitances serially connected within each of the first and second
4 differential signal lines.

7. (unchanged) The two port differential mode SAW resonator circuit as set forth in
Claim 1 wherein adjusting a capacitance of the at least one variable tuning capacitance alters
the resonant frequency for the SAW resonator circuit by altering a total capacitance for a series
resonator circuit formed by a series resonator within the equivalent circuit for the SAW
resonator and the at least one tuning capacitance.

6 8. (unchanged) An oscillator comprising:
7 a differential amplifier; and
8 a two port differential mode SAW resonator circuit connected in a series loop
9 with the differential amplifier for providing low phase noise in hostile environments comprising:
10 a two port SAW resonator having two inputs and two outputs;
11 at least one inductance coupled to one or more inputs or outputs of the
12 SAW resonator, wherein the at least one inductance is connected and sized to
13 approximately tune out a stray capacitance seen across the inputs or outputs within an
14 equivalent circuit for the SAW resonator at a selected frequency; and
15 at least one variable tuning capacitance connected in series with the one
16 or more inputs or outputs of the SAW resonator, wherein the at least one tuning
17 capacitance may be employed to alter a resonant frequency of the SAW resonator
18 circuit.

1 9. (unchanged) The oscillator as set forth in Claim 8 wherein the at least one inductance
2 further comprises an inductor connected across the inputs of the SAW resonator.

1 10. (unchanged) The oscillator as set forth in Claim 9 wherein the inductor further
2 comprises a center tap inductor connected at a center tap through a resistance to a ground
3 voltage level.

1 11. (unchanged) The oscillator as set forth in Claim 8 wherein the at least one variable
tuning capacitance further comprises:

2 a first varactor diode serially connected within a first differential signal line to
3 a first input of the SAW resonator; and

4 a second varactor diode serially connected within a second differential signal line
5 to a second input of the SAW resonator.

1 12. (unchanged) The oscillator as set forth in Claim 11, further comprising:

2 a first resistor connecting the first differential signal line to a tuning voltage level;

3 and

4 a second resistor connecting the second differential signal line to the tuning
5 voltage level.

1 13. (unchanged) The oscillator as set forth in Claim 12, further comprising:
2 blocking capacitances serially connected within each of the first and second
3 differential signal lines.

1 14. (amended) The oscillator as set forth in Claim 8 wherein adjusting a capacitance of
2 the at least one variable tuning capacitance alters the resonant frequency for the SAW resonator
3 circuit by altering a total capacitance for a series resonator circuit formed by a series resonator
4 within the equivalent circuit for the SAW resonator and the at least one tuning capacitance and
5 wherein the differential amplifier and the differential mode SAW resonator circuit form a
6 differential amplifier providing common mode rejection.

1 15. (unchanged) For use in an oscillator, a method of tuning a SAW resonator circuit
2 while maintaining low phase noise comprising the steps of:

3 applying a differential input signal to a two port differential mode SAW resonator
4 having two inputs and two outputs, wherein a stray capacitance seen across the inputs or outputs
5 within an equivalent circuit for the SAW resonator is approximately tuned out at a selected
6 frequency; and

7 adjusting a total capacitance for a series resonator circuit formed by a series
8 resonator within the equivalent circuit for the SAW resonator and at least one variable tuning
9 capacitance connected to an input or output of the SAW resonator.

1 16. (unchanged) The method of claim 15 further comprising:

2 exciting at least one inductance coupled across the inputs or outputs of the SAW
3 resonator, wherein the at least one inductance is connected and sized to approximately tune out
4 the stray capacitance at the selected frequency.

1 17. (unchanged) The method of claim 16, wherein the step of exciting at least one
2 inductance coupled across the inputs or outputs of the SAW resonator further comprises:
3 exciting a center-tap inductor connected at the center tap through a resistance to
4 a ground voltage level.

1 18. (unchanged) The method of claim 15 wherein the step of adjusting a total
2 capacitance for a series resonator circuit formed by a series resonator within the equivalent
3 circuit for the SAW resonator and at least one variable tuning capacitance connected to an input
4 or output of the SAW resonator further comprises:
5 altering a tuning voltage applied to first and second varactor diodes serially
6 connected within first and second differential signal lines to the inputs or outputs of the SAW
7 resonator.

1 19. (unchanged) The method of claim 15 further comprising:
2 employing a differential oscillator including the SAW resonator circuit.

20. (unchanged) The method of claim 19 further comprising:
altering a frequency at which the differential oscillator oscillates by adjusting the
total capacitance for the series resonator circuit.